



Missouri  
Department of  
Natural Resources

# Strategic Plan 2005 to 2009

**December 2005**

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# Governor's Goals for the Department of Natural Resources

Governor Blunt knows our natural treasures deserve the very best care we can give. He provides leadership necessary to protect our natural resources so our children and grandchildren can enjoy them for years to come.

Protecting and preserving our natural resources requires a balance between advancing economic opportunities, preserving individual property rights, and environmental protection. Individual landowners are the primary stewards of Missouri's natural resources, as such their rights will be recognized and respected.

Missouri should rely on voluntary, market-based approaches rather than government regulation. The Department will continue its efforts in transparency of rulemaking that establishes regulations, through its open, participative rulemaking processes.

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I will lead the fight against changes in Missouri River Master Manual that are detrimental to agriculture. I will adamantly oppose any measure that significantly restricts the quantity of water flowing into our state. I will ask the departments to cooperate on this issue. I will work with the COE for the expansion and improvement of the lock system on the upper Mississippi River. (Pages 5, 7)

I will help lead the fight against changes in the Missouri River Manual that are detrimental to our economy. (Pages 5, 7, 8)

DNR will be directed to enhance and protect our natural, cultural and energy resources while demonstrating true and sincere openness to differing points of view. (Throughout plan)

It is essential that we undertake this next round of air quality control measures and emission reductions with the full input of all stakeholders in order to ensure public acceptance and effective implementation. (Pages 5, 16, 18)

I will petition the EPA to allow RFG augmented by a 10% ethanol additive made from corn to be used throughout the state. (Pages 5, 18)

I will encourage DNR and the public to work together to resolve problems and to use innovative methods to protect water quality. (Pages 5, 11, 13)

I will see that the process for accessing the Water and Wastewater State Revolving Loan fund is streamlined and easier to access. (Pages 14, 15)

Permit decisions should be made quickly with prompt notification to the applying party. (Page 4)

I will work to repair the perceived rift between DNR and the public. Legislation that ensures DNR's regulations are based on sound science and that the economic benefits outweigh the costs is a positive step.

We should liaise with Arkansas on water quality. (Pages 10, 11, 13)

# The Department's Tactical Goals

These issues affect all Missourians. How we provide service to address these issues is directly related to how the department operates. Movement from reactive solutions to proactive steps will help us address issues earlier, and hopefully with less cost and effort. Constant improvement in our processes with an emphasis on cooperative efforts will allow the department to more effectively address both the difficult issues and our everyday work. Building bridges with the agricultural community and the tourism industry also rank high on the department's list of priorities.

The department has several initiatives. Those initiatives, their impact and results:

Initiative	Description	Impact	Results
<b>Initial assistance visits</b>	An initial visit is offered to newly permitted facilities or those that have never been inspected	Going over permit requirement early in the process will increase understanding. This is also an opportunity to provide assistance and guidance to improve compliance with requirements.	<b>Improved environmental quality</b>  <b>Improved responsiveness to permittees</b>
<b>Automation of permitting processes</b>	Developing the ability to both complete a permit application electronically, and automation of the information flow from the permittee to the department.	By increasing the speed and ease of application for the most frequently issued permits or the simplest will free up staff time to offer more assistance. Automation will also allow for tracking of permit review progress to be accessible to applicants online	<b>Improved environmental quality</b>  <b>Increased efficiency through simplification and automation</b>  <b>Improved responsiveness to applicants</b>
<b>Ombudsmen</b>	Staff have been located throughout Missouri to listen and seek means to resolve issues.	These efforts will increase problem resolution and communication between Missourians and the department.	<b>Improved service, responsiveness and problem resolution</b>
<b>Flexible appropriations</b>	Much of the FY2007 budget proposal had large organizational units combined into larger budget items rather than many separate items.	This flexibility will allow moving funds and resources to priority needs.	<b>Breaking down silos within the department to enhance service while maintaining accountability</b>

# The Department's Strategic Goals

The Department of Natural Resources strives to protect, preserve and enhance Missouri's natural, cultural and energy resources. We seek to address this mission proactively, identifying issues and problems early before they become major crises. We will actively participate with stakeholders, communities, businesses and the public in this process.

## Water

**Many challenging and encompassing issues facing Missouri's environment deal with water. These will affect our lives, our economy and the state's ability to prosper in the future.**

- > Assure needed water flow in the Missouri River
- > Provide an adequate supply of high quality water. Regional water supply issues in Springfield and southwest Missouri affect water quality and quantity. In north central and northwest Missouri water issues center on the quantity of drinking water.
- > Concentrate our efforts to upgrade an aging wastewater and drinking water infrastructure, especially in major metropolitan areas, with limited financial resources to correct the problem.
- > Implement updated water quality standards to comply with federal law

## Land resources

**Protection and enhancement of productivity takes many forms.**

- > Continue efforts to control soil erosion through funds provided by renewal of the Parks and Soils Sales Tax
- > Redevelop communities through brownfield cleanups. Revitalize and bolster our cities through historic preservation
- > Provide long term stewardship for major sites contaminated by hazardous wastes such as Weldon Spring
- > Ensure the ability of the department to maintain or improve land quality and productivity through management and clean up of hazardous materials through adequate funding.

## Air quality

**Improve St. Louis and Kansas City regional air quality to increase air quality for nearly one half of Missouri's population.**

## Energy

**Missouri needs a long term energy policy that takes into consideration impacts to the environment.**

- > Increase reliance on renewable fuels such as ethanol and biodiesel
- > Bring innovative and environmentally protective energy production to Missouri

## Protect and enhance our State Parks and Historic Sites

- > Provide quality statewide recreation in concert with natural and cultural preservation
- > Renew the Parks and Soils Sales Tax

## Public Service

In order to meet our mission to preserve, protect, restore and enhance Missouri's natural, cultural and energy resources, analysis and assistance must be provided to anyone desiring it, and information provided to serve as the basis for sound decision making. These services are often not strategic, but rather sound business practices. Public service is the cornerstone for all the department does.

### **Increase the department's responsiveness**

#### Key strategies

- Offer one on one assistance through the department's ombudsmen to communities, the public and businesses to more proactively address problems before they become major issues.
- To enhance environmental compliance, offer permitted facilities an Initial Assistance Visit to go over permit specifications, view the operations, and answer questions. Preventing problems early and helping to gain understanding of requirements will both protect the environment and assist businesses at the least costly time.
- Enhanced use of electronic and Internet resources through an automated permitting processes and increased availability of operational information such as permitting, inspection and enforcement manuals on the Internet.
- Continue the department's policy of setting work hours and hours of operation to meet both the needs of our citizens.

### **Increase the operating efficiency of the department.**

#### Key strategies

- Implement use of automated permit applications for quicker turnaround time of permit approval.
- Enhanced use of electronic and Internet resources through an automated permitting processes and increased availability of operational information such as permitting, inspection and enforcement manuals on the Internet. This access to information is for the public to understand the breadth of our work, regulated entities to understand our processes and their requirements, and our staff to have more ready access to needed materials.
- Continually review of department processes, such as permitting, to make them pertinent, effective and as simple as possible for both the user and staff. Review and streamlining these processes will also lay the foundation for automation efforts so that the most efficient and effective processes are automated, not necessarily current processes that happen to exist.
- Continue to seek opportunities to contract functions, such as routine permit review to expediate issuance, that are cost effective while allowing for accountability of results.

### **Maximize the skills and productivity of the department's workforce**

#### Key strategies

- Continue efforts to grow a workforce for the department that reflects Missouri, including minorities, women, disabled and veterans.
- Continue cross training employees to deal with multi environmental media where effective, and other supporting efforts to grow a diverse and trained workforce, meet multiple and changing needs and to provide for backup to maintain work flow.

## Clean, safe and abundant water

Water quality decisions we make in Missouri not only enhance our ability to fully enjoy our water, but such improvements can make their way all the way down to the Gulf of Mexico. The Department of Natural Resources works to protect water quality and availability including preventing pollution from impairing our rivers, lakes and streams and our water supply; reducing soil erosion; and engaging other states and the federal government to maintain Missouri's future beneficial uses of interstate waters.

### Missouri and Mississippi Rivers

Number of Missourians served by protecting the quantity of water in the Missouri River for water supply purposes				
	2002	2003	2004	2005
Individuals using the Missouri River for drinking water	1,904,154	1,943,721	1,983,289	2,423,105
Note: Other benefits of the program's work to ensure that the Missouri River has adequate flow include: recreation, agriculture (irrigation and livestock), flood control, fish and wildlife, water commerce, and industrial usage. Approximately 50% of Missouri's population rely on water in the Missouri River as a source of drinking water.				

Missouri occupies a watershed in America's greatest river system, the Mississippi River and its tributaries. The Mississippi, the Missouri and the White rivers bring into the state tremendous amounts of water providing countless benefits. The water in these rivers must be shared with 19 other states. Missouri is both an upstream as well as a downstream state, which conveys great privilege and heavy responsibility.

As a downstream state we vigorously defend our right to use a fair share of water that flows into Missouri or along its borders. This resource provides nearly half of the state's drinking water, , serves as a mode of transportation for agricultural commodities, supplies cooling water for many of the state's utilities, and provides recreation and tourism opportunities for Missouri citizens. However, massive water diversions that are being developed in upstream states, such as the Garrison Diversion in North Dakota, could divert water out of the Missouri River basin, diminishing the amount of water available for our use.

#### Upper Mississippi River-Illinois Waterway System

The sustainability of the Upper Mississippi River System is extremely important to the economy of the State of Missouri as well as the entire Midwest Region. Currently, the navigation system is antiquated and the ecosystem is becoming increasingly degraded. Several of the existing locks and dams were built in the 1930's and have exceeded their design life. In October 2004 the U.S. Army Corps of Engineers (Corps) released a Feasibility Report and Environmental Impact Statement for a dual purpose integrated plan that if implemented would improve navigation efficiency and environmental sustainability on the Upper Mississippi River and Illinois Waterway System. Authorization of this work was included in the Senate's version of the 2004 Water Resources Development Act, which is yet to be enacted by the U.S. Congress.

The navigation improvements include mooring facilities, switchboats, seven new locks, and related mitigation within the framework of a \$2.4 billion plan with an initial authorization of \$1.878 billion. The costs of the navigation improvements will be shared equally between the Federal Government and the Inland Waterways Trust Fund. The plan call for five new 1,200-

foot locks on the Mississippi River (Locks 20, 21, 22, 24, and 25) and new locks at LaGrange and Peoria on the Illinois River.

Ecosystem restoration actions include island building, fish passage at dams, floodplain restoration, water level management, backwater and side channel restoration, wing dam and dike alterations, island and shoreline protection, improvements to topographic diversity, and switching to dam point control with in a \$5.3 billion, 50-year framework plan with an initial authorization of \$1.462 billion.

### **Maintain a sufficient flow of water in the Missouri River to support the needs of Missouri's citizens.**

#### Key strategies

- Continue to oppose Missouri River Master Manual changes or other policies that negatively impact or restrict Missouri's economy or use of the Missouri River by agriculture, communities, businesses and transportation when there are other options, or where the changes are not scientifically justified in the ongoing interstate discussions, negotiations and resolution of legal issues.
- Continue as the lead agency for interstate river issues and hold membership in such organizations as the Upper Mississippi River Basin Association, the Lower Mississippi River Conservation Committee, and the Mississippi River Parkway Commission to protect Missouri's interest and assist in addressing environmental issues such as hypoxia in the Gulf of Mexico.

### **Quantity of water resources**

Missouri's aquifers contain an estimated 500 trillion gallons of fresh water. Despite this tremendous resource, groundwater overuse in some areas has caused groundwater levels locally to decline tremendously.

Drinking water has become a serious concern for at least twelve counties in northwest Missouri: Andrew, Atchison, Buchanan, Caldwell, Clinton, Daviess, DeKalb, Gentry, Harrison, Holt, Nodaway and Worth. Water supply problems include dry wells, wells that are dry periodically and/or well water that is undrinkable requiring many to haul water for both home and agricultural use. Water distribution problems results largely from aging treatment facilities and distribution lines. Compounding these conditions are forthcoming, more stringent federal regulations for drinking water protection.

Groundwater resources provide much of the water used in southwest Missouri. Several major cities, including Springfield, Joplin, Neosho, Branson, and Lamar have developed surface water supplies that provide a significant percentage of their water supply, but all four communities still rely at least partly on groundwater resources.

Aquifer storage, streamflow and reservoir storage data are important for knowing the volume of water Missouri has available for use, but it is also vital to know how much water is being used. The statewide collection of accurate and timely water use information is paramount to fully understanding water supply issues in Missouri.



## **Increase the number of groundwater monitoring wells from 72 in 2004 to 78 by 2007.**

<b>Number of groundwater monitoring wells in statewide network equipped with satellite telemetry to relay real time water level data in the Internet.</b>				
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Monitoring wells	70	70	72	75
Note: The division goal of 200 wells would allow the state to have at least one well per county with additional wells in the areas of highest groundwater usage, based on approximately 1 well per 3 billion gallons used.				

### Key strategies

- Facilitate options and solutions for drinking water supply problems in Northwest Missouri. Enhance responsiveness by providing onsite staff assistance through the newly opened satellite office in Maryville.
- Continue to monitor groundwater-level declines in the southwestern part of the state (particularly Greene, Christian and Mc Donald counties). Through analysis, propose possible solutions to groundwater shortfalls to local decision makers.

## **Quality of Missouri's water resources**

A little more than half of Missouri's 22,203 classified (having permanent flows or maintaining pools in dry seasons) stream miles fully support aquatic life. Of the 10,900 stream miles that do not fully meet water quality standards, approximately 1,150 miles are impaired by heavy metals or toxic chemicals. Roughly 10,000 miles are impaired by a decrease in the quality of stream habitat caused by such actions such as channelization or sloughing of stream banks.

Of Missouri's 293,759 lake acres, most are threatened by eutrophication, a condition that occurs when nutrient enrichment of a water body leads to increased algae growth. About 80,000 lake acres are impaired by mercury, manganese or nutrients.

About 34 percent of Missouri's population rely on groundwater as their source of drinking water. While most public drinking water supply wells and many private wells are deep, properly cased and properly grouted, some older, inferior quality private wells are shallow, not properly cased, nor properly grouted. By properly constructing and maintaining wells and encouraging aquifer protection, we protect the groundwater resource to ensure safe drinking water for future generations.

There also is increasing evidence that groundwater quality is being threatened by our daily activities. Preliminary investigations by the Centers for Disease Control and the U.S. Environmental Protection Agency indicate that illnesses related to drinking water may be more prevalent than previously assumed. Some scientists indicate that as many as 25 percent of public wells in the U.S. – thought to be producing safe water – may be contaminated with viruses.

<b>Percent of stream miles and lake acres that are safe and usable for the designated beneficial purposes</b>					
	<b>1996</b>	<b>1998</b>	<b>2000</b>	<b>2002</b>	<b>2004</b>
% Stream Miles	52.7%	52.7%	51.5%	48%	50%
% Lake Acres	84.6%	85.4%	94%	69%	71%
Missouri has 22,203 stream miles and 293,759 lake acres classified Data available on a bi-annual basis as reported in the 305(b) report to the US Environmental Protection Agency.					

<b>Major water pollution sources in Missouri's classified waters</b>		
	Percent of classified stream miles	Percent of classified lake acres
Crop production/grazing	34%	15%
Channelization	17%	
Flow regulation		4%
Mining	1%	
Municipal and other domestic point sources		15%
Atmospheric deposition (mercury)	4%	9%
<b>Major contaminants in Missouri's classified waters</b>		
	Percent of classified stream miles	Percent of classified lake acres
Sedimentation/Habitat Degradation	46%	
Low dissolved oxygen		1%
Mercury	4%	9%
Other metals	1%	3%
Nitrogen/Phosphorus		15%
Flow alternation		0%

### Strained sewer systems.

Among the largest of these communities are the St. Louis Metropolitan Sewer District (MSD), Kansas City and St. Joseph. The St. Louis Metropolitan Sewer District is by far the largest sewer district in Missouri. MSD faces enormous challenges today:

- Growth in the large service area;
- Age and undercapacity of the existing wastewater collection system;
- Poor condition of some independent systems added to the MSD system;
- Handling wet weather flows.

The challenge before the Department of Natural Resources and MSD in dealing with wastewater treatment needs and wet weather flows is enormous. While the total cost to achieve compliance has not yet been estimated, it is expected to be in the billions of dollars and to take decades to resolve. It is important to note that unpermitted bypassing of wet weather flows from the MSD sanitary sewer system is not compliant with federal requirements and must be addressed.

Implementation of corrective action must start right away. MSD and our water pollution staff have been working together to develop its long-term control plan, which will be used to guide implementation of new infrastructure.

The Department of Natural Resources is committed to working together with MSD to ensure that it reaches regulatory compliance and the protection of public health and safety.

The department is also working closely with Kansas City and St. Joseph to develop a long-term control plan to address wet weather issues

### Missouri/Arkansas Water Quality Issues

Missouri and Arkansas share waters in this region, not only of Table Rock but also other lakes and streams. Table Rock Lake is important to southwest Missouri's tourism economy. Since 1999, Missouri has imposed local stakeholder driven regulations that require Missouri-side communities in the Table Rock Lake watershed to reduce the amount of the water contaminant phosphorus being discharged from wastewater treatment facilities. Funding has been provided by the Department of Natural Resources and the federal government to assist communities with installation of special phosphorus removal equipment on wastewater facilities. The result has

been a 90 percent reduction in phosphorus discharges into the Missouri-side watershed of Table Rock Lake.

The department continues to meet with Arkansas in its efforts to reduce phosphorus input from the Arkansas side. Arkansas streams contribute about 48 percent of the flow into Table Rock Lake. The Arkansas economy in the Table Rock Lake watershed is largely comprised of poultry production and related meat processing. This has resulted in an abundance of phosphorus from the land application of poultry litter and the wastewater discharges associated with poultry meat processing. In recent months Arkansas has imposed phosphorus limits on some wastewater discharges including the cities of Berryville and Green Forest. They are also working with the agricultural community to reduce the amount of poultry litter that can be applied in certain watersheds.

#### Missouri/Oklahoma Water Quality Issues

The Elk River Watershed of Missouri flows across McDonald County and into the Grand Lake of the Cherokee's. Grand Lake generates an important tourism economy for northeast Oklahoma and is also an important drinking water supply for several communities. Oklahoma has taken an active interest and communicates regularly with Missouri on key water pollution permits. Of special interest have been the Simmons Foods Poultry Processing Plant and the City of Southwest City.

#### Nonpoint pollution

Nonpoint pollution, a type of pollution that does not come from specific discharges, poses a serious threat to Missouri water quality. Runoff is an example of this type of pollution. This pollution affects almost half of Missouri's streams and rivers and about one quarter of all lake acres. Problems include contamination of surface water resources with microbiological contaminants, pesticides, fertilizers, animal manure, the effects from channelization or modification of streams, mining operations and atmospheric deposition of acidity and mercury from coal combustion.

#### Point source pollution

Point source pollution refers to pollution that comes from a single point, such as a pipe. The number of miles of streams that are impaired, or that fail to meet water quality standards, because of point source wastewater discharges has generally held steady since 1984, when statewide data on stream quality first became available. In 1984, 105 miles of classified streams were judged to be impaired by domestic or industrial waste waters. The lowest estimate of this type of pollution was 42 miles in 1996.

Missouri has many examples of activities that are done in a way that protects water quality; the remaining challenge is to ensure that all activities are done in a way that will protect water quality and that those waters not meeting water quality standards are restored. The department began the Clean Water Forum to bring together the public, industry, agriculture and other interested parties to resolve problems related to the enhancement of water quality. The Innovative Technologies workgroup has also been convened to explore the use of new technologies with the promise of more efficient wastewater treatment facilities or lower costs.

#### Confined Animal Feeding Operations

There are about 400 Concentrated Animal Feeding Operations (CAFOs) in Missouri. These facilities generate large amounts of animal manure and have the potential to cause serious water

pollution problems. Concerns center on the cumulative effects of numerous smaller capacity animal production facilities in an area, as well as the potential for contamination from large facilities. Finding ways to safely use animal waste, particularly poultry litter, will continue to be among the state's top priorities, especially in southwest Missouri where improper handling or disposal of poultry litter can impair the region's rivers, lakes and streams.

#### Past lead and zinc mining activities

Past mining activities have also impacted water quality in Missouri. Abandoned lead-zinc mines continue to impair waters decades after mining has ceased. Unfortunately, very few resources are available to address this issue. Twenty-four years of coal mine reclamation and other programs in Missouri have reduced the impairment by acid drainage from coal mining from about 100 to 15 stream miles. A federal tax on coal funds reclamation of historic coal-mined lands nationwide. This tax, collected at the federal level, was scheduled to expire in 2004 but has been renewed through 2006. For the remaining impairments and other areas bordering lead-zinc and coal mines, long-term effects most likely will remain. The department's Division of Geology and Land Survey is conducting an inventory of several thousand lead, zinc and barite mines to assist in prioritizing future sites for cleanup.

#### Soil erosion

The number one pollutant, by a very wide margin, entering Missouri's waters is soil. As soil is washed from the land, it takes other pollutants, such as pesticides, bacteria and fertilizers, with it. Water washing over the land or through the soil can also carry dissolved chemicals all the way to the Gulf of Mexico by the Missouri and Mississippi Rivers. By keeping soil and water that contain agricultural chemicals from entering Missouri's streams, rivers, lakes and water supply reservoirs, we can protect the quality of Missouri's water.

Conservation practices lead to greater water infiltration and less run-off and erosion. Conservation practices hold water in the upland and release it more slowly into the watershed, increasing soil moisture, helping to grow crops and lessening downstream impacts such as flooding, sedimentation and agricultural chemicals in the water. The department's efforts in soil conservation are funded through the Parks and Soils Sales Tax which will be considered for reauthorization in 2006.

**Maintain compliance with Missouri's Clean Water Law for permitted facilities and sites inspected by the department at least at the 82% rate after implementation of new clean water standards. Incorporate new water quality based requirements as needed, including disinfection of wastewater discharges to the extent necessary to protect public health.**

<b>National Pollution Discharge Elimination System (NPDES) permitted facilities in compliance with state and federal Clean Water Act, including monitoring and reporting requirements</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Inspections of permitted entities	1596	1670	1281
Percent of facilities inspected and in compliance	87.3%	82.4%	69.2%
Permit holders for control of discharges to the waters of the state of Missouri			
Municipals	893	899	791
Non-municipals	2,207	2,222	2,153
Concentrated Animal Feeding Operations	444	446	438
Stormwater	6,419	7,470	6,532
General	1,662	1,627	1,601

<b>Stream miles protected for whole body contact recreation</b>			
	<b>2005</b>	<b>2006</b>	<b>2007</b>
Stream miles	5,531	20,471	18,793

#### Key strategies

- Pursue opportunities to resolve water quality problems with a variety of stakeholders including use of innovative technology.
- Offer initial assistance visits to newly permitted facilities or those that have never had an inspection to enhance compliance, understanding of permit requirements, and adhering to environmental requirements from the outset.
- Working with stakeholders, state, local and federal partners, and the regulated community, promulgate water quality standards that meet federal requirements by April 2006.
- Continue efforts with Arkansas and Oklahoma to resolve water quality issues to ensure clean water for Missourians.
- Increase the technical assistance provided to cities, counties and permittees to enhance understanding of effective and efficient erosion control practices.
- Increase inspection of land disturbance permittees to ensure protection of both land and water resources.
- Focus efforts on mercury pollution from power plants, medical and hazardous waste incineration; cement kilns and dental waste that pose a particularly significant threat to Missouri's rivers and streams.
- Establish TMDLs for bodies of water to determine the most effective course of action to increase compliance with Missouri's Clean Water Law.
- A lack of financial resources threatens the stormwater protection program. Seek needed resources and implement a full stormwater protection effort.
- Conduct Use Attainability Analyses to determine where waters can support whole body contact recreation so that appropriate standards on those waters are set.

**Increase the number of stream segments with approved TMDLs from 63 in 2003 to 119 by 2007.**

<b>Stream segments subject to one of the following actions: TMDL completed, permits issued to resolve the impairment, or delisting due to data showing attainment of uses</b>				
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Number of Actions	4	35	18	13
Cumulative number of actions approved by EPA	28	63	81	94
12 TMDL's are scheduled to be completed in 2006				

<b>Total dollars of grants awarded for water quality studies</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
New Grant Funds Available	\$6,234,582	\$4,344,992	\$5,144,916
Grant Funds Awarded	\$3,958,357	\$2,753,884	\$1,958,535
Recipients of water quality study grants			
Government Entities	12	11	23
Nonprofit Organizations	7	5	5
Educational Institutions	7	10	3

<b>Total amount of funds expended to fully or partially restore impaired waterbody segments identified on the 303(d) list pursuant to the Clean Water Act.</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Dollars expended	\$2,780,605	\$3,129,996	\$3,694,038

<b>The number of waterbody segments removed from the 303(d) list as a result of restoration.</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Waterbody segments restored and removed from the 303(d) list	26	0**	0**
<p>The 303(d) list is developed every two years.</p> <p>The 1998 303(d) list is used as a baseline.</p> <p>The 2002 303(d) list was submitted to EPA by the department in August 2002 (FY2003). Final EPA action was not taken until December 2003</p> <p>EPA did not require Missouri to submit a 303(d) list 2000.</p> <p>**During 2004, the Clean Water Commission directed the department to establish new methodology for development of the 303(d) list. This has resulted in an effort to combine the 2004 303(d) list with the 2006 303(d) list.</p>			

### Key strategies

- Work with local entities to encourage the development of locally led voluntary watershed management plans.
- Provide technical assistance to communities in Northwest Missouri seeking to develop additional surface water resources to meet drinking water needs.
- Identify surface water use trends to evaluate needs in an effort to ensure adequate surface water resources for industrial, agricultural, municipal and domestic use.

## **Water Infrastructure Assistance**

Missouri currently has 11,515 permitted wastewater and stormwater entities. Approximately 3,900 operating permit and 1,000 construction permit actions are completed each year. More than 262 leveraged loans have been awarded to communities in these efforts. Through the Clean Water and Drinking Water SRF financing, Missouri communities have saved more than \$400 million in interest compared to conventional, higher-interest rates of financing.

To facilitate easier or quicker access to the State Revolving Loan Funds, the department is undergoing a review process. The first change is the start of “Ready to Proceed” that allows communities that have attained the necessary requirements for participation in the SRF to move ahead in line of communities that are not yet ready to proceed.

The strain placed on many communities’ public infrastructure has continued to grow, while financial resources have shrunk in recent years. Over the last 30 years, communities have spent over \$1 billion in state and federal grants and loans on wastewater and drinking water infrastructure. These facilities were typically designed for a 20 year life. Many of the first built wastewater systems are aging, out of compliance and in need of upgrade, expansion or replacement. Our major metropolitan areas, Kansas City and St. Louis, have 1,187 wastewater facilities eligible for financial assistance. In rural areas, some communities lack the technical and financial resources to either develop or maintain their water and wastewater infrastructure.

**Maintain infrastructure assistance through low interest loans and grants to construct or improve wastewater treatment, public drinking water and stormwater facilities.**

<b>Amount of low-interest loans awarded to eligible local governments for construction and improvement of their water or wastewater infrastructure and for controlling urban stormwater</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Construction of public and animal wastewater treatment facilities	\$189,063,207	\$273,747,839	\$45,840,858
Stormwater control	\$725,000	\$0	\$0
Rural water, sewer, and other	\$5,897,000	\$1,182,965	\$13,414,600
Construction of drinking water systems	\$22,735,000	\$14,815,000	\$37,825,000

<b>Amount of grants awarded to eligible local governments for construction and improvement of their water or wastewater infrastructure and for controlling urban stormwater.</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Stormwater control	\$0	\$10,202,021	\$0
Forty percent grants	\$8,036,150	\$2,017,537	\$1,000,000
Rural water, sewer and other	\$6,178,340	\$5,658,579	\$1,250,000
FY 2003 Stormwater Control grant applications were not awarded until FY 2004.			
No bond sales occurred during fiscal years 2004 or 2005. Grant and loan awards were made from remaining balance of previous bond sales.			

<b>Communities utilizing the infrastructure loan and grants program</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Construction of public and animal wastewater treatment facilities	34	19	16
Stormwater control	0	67	0
Rural water, sewer and other	54	23	15
Construction of drinking water systems	9	7	8

### Key strategies

- Make participation in the State Revolving Fund more feasible by simplifying and streamlining application requirements.
- Seek resources to increase the staff to provide direct assistance to communities in comprehensive water and wastewater site evaluations, design capacity of existing facilities and to inspect facilities under construction.
- Seek to develop and implement areas of the Drinking Water State Revolving Fund that would extend eligibility of the Fund to privately owned public water systems as allowed under the federal Safe Drinking Water Act.
- Seek resources for the rural water grant program that provide assistance to publicly owned community water systems in small rural communities.
- Investigate the use of the State Revolving Fund to assist with security vulnerability assessment and emergency planning efforts.
- Establish field positions to increase awareness of the State Revolving Fund and to facilitate assistance to eligible entities.

## Clean Air

Clean air sustains us and keeps us healthy. Pollutants in air can cause early death, aggravate a variety of heart and lung problems including chest pains, and trigger asthma and other breathing problems. Other pollutants can have toxic effects, including effects on fetal and child development, and some have carcinogenic potential.

One way we measure air quality is to compare air monitoring data to the federal health-based standards known as National Ambient Air Quality Standards. The U.S. Environmental Protection Agency (EPA) develops these standards based on its authority under the Clean Air Act. In recent years, ground-level ozone, fine particles and lead have been the primary airborne pollutants of concern in Missouri.

For Missouri, the major challenge affecting clean air is air quality in the St. Louis and Kansas City areas. Discussion about air quality control measures to address these issues involves local communities, citizens, businesses and interest groups to come to remedies that will be supported and effective.

### St. Louis and Kansas City air quality

#### Ground level ozone

Naturally occurring ozone in the upper atmosphere protects the earth from the sun's harmful rays. Ground-level ozone is an irritant that damages lung tissue and aggravates respiratory disease. Ozone is also harmful to plant life, damaging forests and reducing crop yields. This pollutant is the most harmful part of what we sometimes call "smog."

In Missouri, St. Louis and Kansas City face the greatest threat from ground-level ozone. Both communities have worked diligently to correct this problem. Kansas City remains in compliance with federal ozone standards thanks to the use of low vapor pressure gasoline; industrial controls for printers, surface coating operations and manufacturers; and voluntary efforts by residents, including commuting and taking the bus on days when ozone is likely to form.

#### 1-hour ozone standard

The St. Louis region recently attained the 1-hour ozone standard, so the EPA granted the Department of Natural Resources' request that this area be redesignated to attainment for the 1-hour ozone standard. The trend in volatile organic compounds and nitrogen oxides that can react to form ozone, has declined during the past decade. Cleaner burning reformulated gasoline, vapor recovery at gas stations, industrial controls, vehicle emission testing, and education all have helped the area realize improvements in air quality. Voluntary efforts have been important in St. Louis as well.

#### 8-hour ozone standard

The EPA found the 1-hour standard was not sufficient to protect public health, and consequently promulgated a new, more protective standard known as the 8-hour ozone standard. This new standard is stricter than the 1-hour standard, and the St. Louis region is not in compliance with this new standard. Therefore, St. Louis is once again a "nonattainment area" and must develop a plan to reduce air pollution to meet this new standard. Kansas City currently is in attainment for



the 8-hour standard. The summer of 2004 proved to be very mild and many areas across the country enjoyed better air quality due to these favorable weather conditions. However, 2005 showed a return to higher ozone levels, indicating that additional measures to further reduce pollution are necessary.

Illinois and Missouri have been meeting with stakeholders to begin development of the St. Louis State Implementation Plans for the 8-hour ozone standard. The St. Louis nonattainment area includes several counties in Illinois. The 8-hour ozone State Implementation Plan is due to the EPA in June 2007, and the St. Louis non-attainment area must meet the standard by 2010.

The Department of Natural Resources' effort to meet the one-hour standard in St. Louis included an enhanced vehicle emissions testing program, the Gateway Clean Air Program, which began operation in 2000. The Gateway Clean Air Program is a key component of the overall effort to reduce smog and improve the health of citizens who live in the St. Louis area.

In early 2004, the Mid-America Regional Council in Kansas City formed an Air Quality Working Group to address 8-hour ozone issues for the area. The working group is composed of local elected officials, regulated businesses and industries, and community groups. The Missouri Department of Natural Resources and Kansas Department of Health and Environment each assigned staff to assist in this effort.

In September of 2005, work began on the Kansas City Maintenance Plan for the Control of Ozone. Although Kansas City is in attainment for the eight-hour standard, its previous status of nonattainment for the one-hour standard requires the region to continue to have a maintenance plan in place. A technical workgroup has been formed with local Kansas City stakeholders to review contingency control measures. This maintenance plan must be submitted to the EPA by June of 2007.

<b>Daily average 8-hour ozone values</b>																
	<b>90-92</b>	<b>91-93</b>	<b>92-94</b>	<b>93-95</b>	<b>94-96</b>	<b>95-97</b>	<b>96-98</b>	<b>97-99</b>	<b>98-00</b>	<b>99-01</b>	<b>00-02</b>	<b>01-03</b>	<b>02-04</b>	<b>03-05</b>	<b>04-06*</b>	<b>05-07*</b>
St. Louis MSA	98	91	91	98	104	100	95	95	94	90	90	92	89	89	89	89
Kansas City MSA	83	82	82	90	92	94	93	91	89	84	85	84	82	83	83	83
Springfield MSA	71	70	69	75	79	78	73	73	78	75	76	73	70	73	73	73
The eight-hour National Ambient Air Quality Standard is 85 ppb, to be determined as follows: For each site, the fourth highest daily eight-hour average for each year of a consecutive three-year period are averaged. The site with the highest value determines the design value for the area. If the design value is 85 ppb or greater the area is in violation.																
*Projected																

<b>Number of ozone alert days</b>											
	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	
St. Louis area total	20	31	15	6	30	37	23	11	24	28	
Kansas City area total	2	11	1	3	10	21	6	16	14	5	
Springfield total	0	0	1	0	1	4	1	0	1	2	

Number of ozone alert days continued						
	2000	2001	2002	2003	2004	2005
St. Louis area average	17	13	31	10	0	25
Kansas City area total	12	4	12	12	0	13
Springfield total	1	1	1	0	0	0

An 'ozone alert day' is a day when at least one monitor in the area recorded an exceedance (.085 ppm) and corresponds to an Air Quality Indicator of orange (unhealthy for sensitive groups) or higher. The 8-hour standard is an average of eight 1-hour values, using a rolling forward average. The 8-hour average for 10 a.m. is the average of the hourly values for 10 a.m. to 6 p.m.  
\*Projected

### Fine Particles

In revising the air quality standards, EPA created new standards for fine particles (also called PM<sub>2.5</sub>, which stands for particulate matter less than 2.5 microns in diameter.) Some fine particles are directly emitted and others are formed from precursor pollutants, as is the case with ozone. EPA's scientific review concluded that PM<sub>2.5</sub> penetrates deeply into the lungs and is more damaging to human health than the coarse particles known as PM<sub>10</sub>. Studies show a correlation between exposure to PM<sub>2.5</sub> and health effects such as premature death and increased hospital admissions and emergency room visits, especially for the elderly and individuals with cardiopulmonary disease.

In 2004, Missouri proposed to EPA that portions of the St. Louis area be classified as nonattainment for PM<sub>2.5</sub>, including St. Charles, St. Louis, Franklin, and Jefferson counties, and the city of St. Louis. Illinois has made similar proposals for areas east of St. Louis. In its final action EPA formally designated these proposed Missouri counties as nonattainment. The same group working on developing the State Implementation Plan for the St. Louis 8-hour ozone nonattainment area is also working on the plan for particulates. The PM<sub>2.5</sub> State Implementation Plan is currently due to the EPA in January 2008, and the St. Louis non-attainment area must meet that standard by 2010.

Annual averages at highest PM 2.5 concentration sites								
	98-00	99-01	00-02	01-03	02-04	03-05	04-06*	05-07*
St. Louis	17.3	16.4	15.2	15.4	14.4	13.4	14	14
Kansas City	14.1	13.4	14.2	14	13.3	12	12	12
Springfield	12.2	12.3	12.2	12.6	11.7	10.9	11	11

The National Ambient Air Quality Standard for PM 2.5 is 15.0 ug/m<sup>3</sup>, averaged over a three year period. Meteorological conditions in 2004 were conducive to lower PM 2.5, which may not occur in 2005.  
\*Projected

### **Improve air quality to attain or maintain the following:**

- **Attainment of the federal 8 hour ozone and PM 2.5 standards in St. Louis area by 2010, and**
- **Maintenance or attainment of the federal 8 hour ozone and PM<sub>2.5</sub> standards in the Kansas City area by 2010.**

### Key strategies

- Continue work with stakeholders in industry and environmental groups to find common-sense ways to reduce regulatory burden and costs without sacrificing air quality
- Petition the EPA to allow RFG augmented by a 10% ethanol additive made from corn to be used throughout the state.

- Continuously improve the vehicle emission testing program in order to achieve maximum air quality gains and maximum customer convenience.
- Evaluate ways in which we can work with other agencies to address asthma concerns, and other air related health and environmental problems specific to Missouri.
- Continue regular meetings with stakeholders through the Air Advisory Forum to find ways to improve the program through a free exchange of ideas, open discussion and consensus building.
- Proactively look for potential topics and issues to bring before the Forum for discussion.
- Develop the St. Louis State Implementation Plans for the eight-hour ozone and PM<sub>2.5</sub> standards with stakeholders in both Missouri and Illinois.

# Productive Land

## Soil Conservation

Percentage of agricultural land eroding at the rate which is tolerable* ("T")			
1982	1987	1992	1997
64.50%	70.20%	76.30%	80.90%
Source: Natural Resources Inventory (NRI)			
Timeframe: data reported every 5-years from Natural Resource Conservation Service (USDA) 2002 data is not yet available.			
*Tolerable means that the amount of soil erosion does not have a significant effect on soil productivity.			

About 59 million tons of soil erodes from Missouri's land each year. Much of that soil enters our waterways, clogging and filling streams, reservoirs and lakes. The severity of flooding is increased as these silt-laden waterways and reservoirs do not have the capacity to hold as much water. Thinner topsoil also decreases soil productivity. Less production means lost income to the landowner and higher prices for the consumer. Although soil erosion is a natural event, certain traditional farm tilling methods can accelerate erosion. This depletes the soil, requiring more use of fertilizers and pesticides and sometimes even rendering it useless. Our goal is to have 95 percent of Missouri's agricultural land protected so as to maintain its long-term productivity. With funding from the parks-and-soils sales tax, the department's Soil and Water Conservation Program has given approximately \$396 million to 168,500 landowners for soil conservation efforts.

As recently as 10 years ago, Missouri was second in the nation for its rate of soil erosion. Because of its climate, topography and the types of soils common to the state, Missouri will need to continually address significant erosion problems on land used for cultivated crops.

Funds are available to landowners to pay up to 75 percent of the cost of putting soil conservation practices on the land. This money will be lost unless the tax is renewed by 2008. The renewal will be voted on initially in 2006. Placing the sales tax on the ballot every 10 years is a way of measuring how voters feel about soil and water conservation and their state parks. It keeps the department accountable to the people. The accountability of having a regular renewal of the tax helps motivate staff to continue to provide a high degree of public service and accountability.

**Reduce erosion on approximately 3.7 million acres through financial assistance to reach our goal of 95 percent of Missouri's agricultural land eroding at tolerable rates or less.**

Cumulative tons of soil saved through financial assistance opportunities (millions of tons)									
1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
37.38	51.49	60.62	65.90	68.66	72.00	76.50	81.00	84.31	87.7
Source: Program database summaries of regular cost share, Special Area Land Treatment (SALT) cost share and Agricultural Nonpoint Source (AGNPS) projects									

Soil saved per incentive grant per practice (tons)					
2000	2001	2002	2003	2004	2005
490	510	506	450	445	487
Source: Data is calculated by dividing the tons of soil saved in a particular year by the landowners receiving financial assistance for a practice. The calculations are based on research conducted by the US Natural Resource Conservation Service.					

<b>Requests for financial assistance</b>							
	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Requests processed for grant payments	6518	7954	6627	8400	8173	7487	7433
Total clients served by incentive grants	8072	8703	7297	9176	9012	8326	8332
In this instance, processed is synonymous with awarded. Clients include landowner applicants and district offices. Incentive grants include district grants, cost share and SALT cost share financial assistance. The method used to count processed payments was changed in FY-03 which caused the spike in the FY-02 figure.							

<b>Efficiency in requests processed</b>				
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Cost Share Claims processed	8400	8173	7487	7433
Requests for waivers* *Not included in calculation below.	37	23	16	12
Appeals to Commission	7	16	19	14
Percentage of landowner claims processed that meet the program rules and policies	99.9%	99.8%	99.7%	99.8%

#### Key strategy

- Working with partners in both the agricultural and parks communities, seek renewal of the Parks and-Soils Sales Tax before 2008.

#### **Maintain administrative support and training for Missouri's 114 locally elected soil and water conservation district boards and their employees.**

#### Key strategies

- Provide assistance to district boards at board meetings and other opportunities.
- Support district efforts to track finances through an automated accounting system.
- Utilize problem-solving skills to help district boards deal with challenging administrative issues such as personnel, finances and cooperative projects.
- Develop and monitor contracts to conduct independent audits of districts.

### **Brownfields**

Brownfields are sites where redevelopment and reuse is hampered by known or suspected contamination from hazardous substances. While many Brownfield sites are minimally contaminated, potential environmental liability can be a problem for owners, operators, prospective buyers and financial institutions and communities. Because of the large number of these sites, their economic impact – especially in heavily industrial areas – is substantial. Often brownfields are in historic areas of cities, so historic preservation becomes another consideration.

The department seeks to resolve these issues so Brownfields redevelopment and reuse can proceed. The department provides consistency, including assurances that the property has been cleaned up to standards safe for its intended use. Successful cleanup and long-term stewardship of any residual contamination provides the certainty that makes redevelopment happen. Brownfield cleanup puts property back into productive use, encourages redevelopment and increases economic development in distressed areas. In Missouri, 186 brownfield sites currently are undergoing cleanup. Another 274 sites have been cleaned up and returned to use since the cleanup program's inception in 1994. Approximately 42% of Brownfield sites are cleaned up in a year or less and over 65% of Brownfield sites are cleaned up within 2 years

A growing problem is the abandonment of significant parts of our urban core areas. Traditional neighborhoods, downtown business districts and once-thriving industrial areas become stagnant and underutilized. This results in a loss of economic opportunities for the residents of these areas. This only serves to fuel the conditions leading to further abandonment. Combining historic preservation efforts with cleanup of contaminated urban land, or brownfields, will strengthen our cities.

## Long Term Stewardship at Weldon Spring

The Weldon Spring Site is located in southwest St. Charles County approximately 30 miles west of downtown St. Louis. The site consists of two main areas, the Weldon Spring Chemical Plant and the Weldon Spring Quarry. Both areas were previously part of the 17,233-acre Weldon Spring Ordnance Works, an explosives production plant operated by the Department of Defense during World War II. Operation of the chemical plant and ordnance works resulted in contamination of soils, sediment and buildings at the chemical plant and waste deposited in the quarry.

In 1986 the U.S. Department of Energy accepted responsibility for remediating the sites and in 1987 the quarry was placed on the Environmental Protection Agency's National Priorities List or Superfund.

Long-term stewardship is the cornerstone of a completed cleanup at this site because of the long life of the contaminants (e.g. uranium half-life 4.5 billion years) that are being left in place. Separate plumes of contaminated groundwater will be left to weaken over time. Institutional controls must be in place to ensure long term enforcement and durable restrictions to keep people living and working in the area, safe. Long-term stewardship addresses not only protecting our generation but future generations, as it relates to the operation and maintenance of the site.

**Maintain the number of cleanups completed each year at least at 200 per year.**

Brownfields/VCP cleanups completed (annually)										
1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
2	9	16	16	20	25	26	33	44	45	28

### Key strategies

- Work with department staff and the Department of Economic Development to develop Brownfields to revitalize their urban cores along with preserving historic resources.
- Finalizing the Tri-party Federal Facility Agreement and implement the Long-Term Surveillance and Maintenance Plan for Weldon Spring which sets out all activities, including acquisition of land use controls, necessary to ensure protection of human health and the environment.
- Apply the Risk Based Corrective Action document to facilitate risk based cleanup and appropriate reuse of property that results in economic development and protection of human health and the environment. Improve and enhance long-term procedures to monitor and enforce institutional controls and long-term stewardship.

## Missouri's Energy and Economic Security

The Department works to ensure that Missouri's energy supplies are adequate, diverse and reliable and produced and used in an environmentally sound manner. Two major areas of focus are energy efficiency and the development and use of Missouri's renewable energy resources which contribute to self-sufficiency and fuel diversity and benefit Missouri's energy security, environment and economy.

Energy consumed by fuel type in Missouri									
	1994	1995	1996	1997	1998	1999	2000	2001	2002-2004*
Fossil fuels	91.2%	92.5%	93.0%	93.1%	93.2%	93.4%	93.0%	94.0%	NA
Nuclear	6.5%	5.2%	5.3%	5.3%	4.9%	4.8%	5.9%	4.8%	NA
Hydroelectric	1.2%	1.1%	0.7%	0.8%	1.3%	1.0%	0.2%	0.5%	NA
Other renewable	1.2%	1.2%	1.0%	0.8%	0.7%	0.8%	0.9%	0.7%	NA

\* Data provided by the US Department of Energy has a several year lag in reporting.

Trillion BTU's of renewable energy consumed in Missouri	2002	2003	2004	2005
	5.28	7.55	7.76	8.39 (projected)

Total Missouri energy expenditures by fuel type (\$ million)									
	1994	1995	1996	1997	1998	1999	2000	2001	2002-2004*
Electricity	3,749	3,892	3,962	4,002	4,195	4,186	4,370	4,414	NA
Petroleum	4,705	4,927	5,840	5,769	5,147	5,759	7,062	6,990	NA
Natural Gas	1,281	1,171	1,519	1,591	1,368	1,341	1,736	2,363	NA
Coal	42	43	41	50	42	42	35	41	NA
Other	14	15	16	12	10	11	16	13	NA
Total	\$9,791	\$10,048	\$11,378	\$11,424	\$10,762	\$11,339	\$13,220	\$13,822	NA

Comments: Fossil fuels consist of coal, natural gas and petroleum minus ethanol contained in transportation fuels.

"Other" energy use includes direct heat or electricity produced by wind or solar.

\*Data provided by the US Department of Energy has a several year lag in reporting.

Renewable energy consumption includes biomass (ethanol, biodiesel, industrial and utility wood use, biogas from wastewater treatment plants and landfills), solar, and wind energy sources. Non-fossil resources not included are hydroelectric generation (due to its year-to-year variations that would reduce the value of the data series as an indicator); residential charcoal and wood use, consumption of crop waste, as it is not produced as a fuel, and waste tires.

Missouri's consumption of energy from all sources has increased 20 percent from 1990 through 2001. More than 95 percent of Missouri's primary energy sources (natural gas, coal and petroleum) are imported from outside the state increasing energy expenditures 22 percent between 1999 and 2001, from \$11.3 billion to \$13.8 billion. In 2001, Missouri ranked as the 20th highest energy-consuming state in the nation.

The potential for solar, biomass and wind resources exists in Missouri and in surrounding states. While Missouri's wind energy resources are not as abundant as some of our neighboring states to

the north and west, we do have the potential for utility-scale development at some locations in the state, particularly in northwest Missouri. The Energy Center's updated wind maps and assessments make wind-resource data available to developers and utilities as they consider developing this renewable resource. Every day, Missouri's farms have access to bioenergy and solar and wind energy. New technologies offer the opportunity to harvest this energy, as well as for sustainable cash crops. The Department of Natural Resources' Energy Center has developed a model to help electric cooperatives, municipal electric companies and rural industries assess biomass as an energy source.

In recent years Missouri has been active in the development and use of ethanol. In 2005, Missouri attained an annual ethanol production capacity of 110 million gallons per year. Ethanol production facilities are located in Craig, Macon and Malta Bend, and another facility that will add 45 million gallons per year of capacity in 2006 is under construction in Laddonia. Other areas of the state are studying the feasibility of building ethanol plants as well.

Biodiesel production in Missouri is also helping to increase our indigenous supply of fuels. Two plants of less than 10 million gallons per year are operating in Bunceton and Bethel, and a 30 million-gallon-per-year facility should begin production in Mexico in 2006.

Opportunities abound to advance energy efficiency and the development of Missouri's clean renewable resources to help meet our energy needs. Several Missouri electric utilities have announced interest in building coal-fired power plants in Missouri. Energy efficiency moderates demand, helping to reduce the demand for energy, increasing the supply and containing energy prices. Energy efficiency provides additional environmental and economic value by preserving natural resources and reducing emissions and keeps more of Missouri's energy dollars within the local economy.

**Continue to participate in forums on energy use and policy at local, state and federal levels, as well as monitoring and analyzing information to inform policymakers and the public.**

#### Key strategies

- The Missouri Energy Center will continue to integrate work with the Missouri Public Service Commission and the DNR Air Pollution Control Program to increase energy efficiency and new technologies in order to decrease the negative environmental impact of energy development and use and to mitigate the impact of energy price volatility.
- Recommend actions in support of clean Missouri alternative energy to achieve the economic, environmental, energy security and public health benefits associated with diversified energy sources.
- Seek additional resources to assist the state in aggressively pursuing energy-efficiency improvements in state buildings using performance contracting.
- Monitor federal discussions about federal energy policies and processes to identify and represent Missouri's interests.
- Monitor, analyze and report on Missouri's energy supplies and prices to policymakers and the public to determine actions to promote dependable, affordable and environmentally sound production, distribution and use of energy.



## Enjoyment of Missouri's Natural and Cultural Resources

The health and vitality of Missouri's State Parks and historic sites are heavily dependent upon healthy air, clean water, protected land and rich cultural resources. They are the culmination of our efforts to protect our state's environment and cultural resources.

	1998	1999	2000	2001	2002	2003	2004	2005
Number of State Park visitors	17,309,592	18,253,665	17,905,808	18,103,273	17,760,076	17,060,086	17,120,989	17,317,708
Number of vehicles*	4,802,375	5,475,069	6,033,080	5,666,408	6,046,324	4,987,091	4,837,103	5,169,193
Number of camping permits	293,422	290,943	308,697	293,559	286,899	278,467	280,747	301,543

Number of vehicles is accumulation of those reported, not all parks and sites report the number of vehicles. Therefore, it is an estimate of the number of vehicles at DSP facilities.

Satisfaction of State Park visitors				
	2001	2002	2003	2004
Visitor satisfaction with facility operation and maintenance	94%	92%	90%	92%

Percent of state budget allocated to State Parks compared to national and regional averages.			
	2002	2003	2004
Cost per visitor	\$1.70	\$1.64	\$1.73
% state budget allocated to State Parks compared to:			
regional average	0.23%	0.20%	0.19%
national average	0.22%	0.21%	0.20%
in Missouri	0.17%	0.15%	0.17%

The mission of the State Park system is to preserve and interpret the state's most outstanding natural landscapes and cultural landmarks, and to provide recreational opportunities. To accomplish this, the system preserves the homes of famous Missourians, Civil War battlefields, and reminders of yesterday such as gristmills and covered bridges. The state's most outstanding landscapes and natural features are preserved here for everyone to enjoy – deep forests, glades, prairies, wetlands, streams and lakes. These settings provide many opportunities for recreation, including camping, hiking, fishing, picnicking, horseback riding, boating, ATV and dirt bike riding and just enjoying the outdoors.

The Missouri State Park system has consistently been ranked as one of the best State Park systems in the nation, and has a very high satisfaction rating with visitors. It was recognized as one of only three nationwide finalists in the 2005 National Gold Medal and State Park Management Awards Program.

This support is reflected in the approval by voters of the Parks-and-Soils Sales Tax, which is the primary funding source for the State Park system. This tax has been approved by Missouri voters three times consecutively and will need to be re-authorized again by 2008, when it is scheduled to expire.

Missouri's State Parks and Historic Sites have become an important component of our state's economy as well. A study by the University of Missouri-Columbia recently found that in 2002,

individuals and families visiting Missouri State Parks spent more than \$410 million in Missouri. Of that total, non-resident visitors generated \$140 million in total sales in Missouri. This includes all sales associated with the trip, such as travel expenses, lodging and groceries. When the total \$410 million is spent and re-spent in the economy, it brings the State Park system's overall economic impact in the state to \$538 million annually.

#### Stable adequate funding

The Parks and Soils Sales Tax and its renewal for ongoing support of the system is the most important issue facing the system. The deterioration of the park system in the late 1970s and early 1980s led to the development of the earmarked fund to provide the fiscal foundation to support the system. We are now approaching a difficult period for parks to balance funding available and the continued demands placed on the system for park, site and program expansion.

#### Infrastructure

Although the Missouri State Park system is considered an award-winning system, it faces challenges like all agencies that manage public lands. An immediate challenge is to upgrade the infrastructure within many of the State Parks and Historic Sites. Many of these facilities were developed in the 1930s and the infrastructure is having difficulty in supporting the millions of visitors to the system and the improved standards required for clean water and wastewater treatment.

#### Threats

There are many changes going on in our state and on the periphery of our State Parks and Historic Sites. These factors can threaten the integrity of our sites and diminish their value as state treasures. The 1992 State Park threats study, which is currently being updated, revealed that urbanization was a serious threat in 11 State Parks and Historic Sites. Conceptual development plans and resource management plans support the need to fill in awkward park boundaries that negatively impact park management and to protect watersheds and important historic and scenic zones. Urbanization escalates land prices in and around State Parks to the extent that the department cannot effectively purchase adjacent lands. Land clearing of scenic zones, complex wastewater issues, adjacent landowner trespass, expanding deer herds in no-hunting areas, exotic species encroachment, utility easements all adversely impact natural, cultural and recreational resources linked to urban expansion.

Plant and animal species that were introduced from other countries and continents often cause tremendous ecological and economic problems in State Parks. Exotic species jeopardize native species or ecosystems in 34 parks. The problem continues to grow and threatens park and non-park land alike.

#### Increased expectations

Keeping up with public expectations requires expansion, upgrades, improvements and new facilities in the State Park system. There is a desire voiced by many citizens and park users for new parks and historic sites, better campgrounds, upgraded electric systems, improved security, more visitor centers, additional trails and increased number of restrooms. Stewardship of natural and cultural resources competes with other system needs that can decrease the priority given to it, thus marginalizing resource management.

## Management of Missouri's State Park System to Provide Outdoor Recreation Opportunities

**Maintain overall satisfaction with facility operation and maintenance at the satisfied level or higher.**

### Key strategies

- Working with partners, seek renewal of the Parks and-Soils Sales Tax before 2008. Seek additional funding beyond traditional means to enhance facilities to meet the needs of visitors, such as larger campsites with upgraded electricity.
- Support and increase the number of State Park volunteers to both increase the projects completed and to provide a sense of ownership in Missouri's resources.
- Continue to expand the service offered through the contracted campground reservation system to address both customer and park operation needs.
- Continue efforts to replace or upgrade water and wastewater infrastructure.
- If the federal Land and Water Conservation Fund is fully funded establish guidelines to allow for use of a portion of these funds for Missouri state agency projects
- Clarify and enhance the working relationship between the State Park Foundation, other friends groups and non-profits
- Seek means to provide the needed Information Technology infrastructure, including GIS systems, in the system so operations progress efficiently to meet both visitor needs and the mission to preserve natural and cultural resources.
- Continue participation in interstate and national discussion groups to examine ways to develop ongoing partnerships with public agencies and private organizations in support of National Historic Trails.

## Preservation of Missouri's Significant Cultural Heritage

**Increase the preservation of Missouri's cultural resources**

<b>Documentation of cultural resources in the Missouri State Park System</b>			
	<b>2003</b>	<b>2004</b>	<b>2005</b>
Projects that potentially effect archaeological sites	404	469	475
Number of decreased threats to cultural resources	100	65	123
Percentage of properties surveyed of those reviewed	14%	16%	32%
Number of cultural resources assessments and treatment projects	14	21	37
Number of completed cultural resource management plans	3	1	1
Percentage of artifacts entered into automated cataloging system	32.0%	35.8%	37.8%
Number of archaeological properties identified and evaluated	404	469	475

### Key strategies

- Document and evaluate threats to cultural resources to seek means to reduce the deterioration of these resources.
- Provide greater interpretation of minority or under represented historical and cultural themes.

- Work with partners in the redevelopment of the Missouri State Penitentiary in Jefferson City, the oldest prison west of the Mississippi River.
- Strengthen relations with tribal governments through consultation about State Parks, interpretation and repatriation.

## **Preservation of Missouri's Significant Natural Heritage**

### **Decrease the threats and increase the preservation of native species and environments in State Parks.**

<b>Number of acres preserved in the State Park system</b>			
	<b>2002</b>	<b>2003</b>	<b>2004</b>
State Parks acres in Ecological Stewardship Areas	67,167	67,687	68,117
Acres designated as Natural Areas and Natural Heritage Sites	16,500	16,591	17,021
Threats reduced through land acquisition (threats such as noise pollution)	10	15	9
Number of acres acquired that reduce threats to watersheds or habitats	367	280	71

Data are collected by calendar year; therefore, 2005 numbers are not yet available.

<b>Increase the quantity of State Park lands zoned for preserving Missouri's natural heritage themes, native species and environments; and expand planning efforts for them</b>			
	<b>2002</b>	<b>2003</b>	<b>2004</b>
Percent of natural landscape themes in State Parks	65%	72%	72%
Percent of natural landscape regions in State Parks	79%	84%	84%
Percent of Missouri's rare and endangered species found in State Parks	21%	22%	22%
Percent of Missouri's land area in State Parks	0.31%	0.31%	0.31%
Number of biological inventory and monitoring programs completed	74	65	70
Total number of acres managed by prescribed fire	31,592	31,808	31,885
Number of acres added to the division-wide prescribed fire program	970	216	77
Number of acres prescribed burned on State Park lands in the post-fire season	7,937	11,160	6,089

### **Key strategies**

- Make natural resource data available to managers and the public by adding to the number and scope of biological inventory and GIS databases.
- Participate in the Missouri Bird Conservation Initiative and the Important Bird Area project.
- Preserve and restore natural environments through prescribed fire, ecosystem restoration, exotic species control or other means.

## Interpretation of Missouri's Natural and Cultural Resources

### Increase the opportunities for interpretation of Missouri's natural and cultural resources

Interpretation of natural and cultural resources in the State Park system				
	2002	2003	2004	2005
Number of interpretive programs presented	29,307	29,555	40,014	48,998
Percent of visitors participating in interpretive programming *	9%	9.3%	8.63%	8.16% **
Percent of visitors surveyed who were satisfied or very satisfied with interpretive programming***	N/A	N/A	N/A	99%

\* Calendar 2005 through the end of October 2005

\*\* New reporting methods are gathering more accurate data and eliminating some of the estimates used in past years. Several positions were also eliminated during 2005. This percentage represents 1,307,735 visitor contacts made for year to date 2005 (January through October). On average, this is over 5,000 visitor contacts for each full time and seasonal interpreter in the Missouri State Park system.

\*\*\*This is a new measure for 2005.

#### Key strategies

- Continue coordination of the Lewis and Clark Bicentennial through 2006, including the last National Signature Event in St. Louis.
- Complete the work of the Interpretive Themes Taskforce resulting in recommendations. Develop an action plan to implement approved recommendations that includes who, what, when and the deliverable product.
- Make sure that Missouri is represented on the national commission to keep us in the forefront of the funding and activities surrounding the 150<sup>th</sup> commemoration of the Civil War.